<u>REMARKS</u>

I.   <u>Introduction</u>

In response to the Office Action dated August 10, 2004, claims 3, 11 and 19 have been amended. Claims 1-24 remain in the application. Re-examination and re-consideration of the application is requested.

II.   <u>Claim Amendments</u>

Applicants' attorney has made amendments to the claims as indicated above. These amendments were made solely for the purpose of clarifying the dependency and language of the claims, and were not required to distinguish the claims over the prior art.

III.   <u>Non Art Rejection</u>

In paragraph (6) of the Office Action, claims 1-24 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Office Action states that the phrase "self-join" is not described in the specification in such a way as to enable one of skill in the art to which it pertains to make and/or use the invention.

Applicants' attorney respectfully traverses this rejection. Specifically, Applicants' attorney submits that "self-join" is defined in the Applicants' specification as being a table joined with itself, and this definition of self-join is well known to those skilled in the art.

Consider the following:

<u>Applicants' Specification: Page 1, Line 22 et seq.</u>
For example, if a join is a self join, and the join predicate links the two quantifiers on the table's key columns, the query can be rewritten into a simple select. This is illustrated using the following example:

    SELECT E1.SAL, E2.SAL
    FROM EMP E1, EMP E2
    WHERE E1.NO = E2.NO

The query selects the salaries of employees on matching values of attribute NO. Since NO represents employee numbers and it is also the table's key, each row represented by quantifier E1 will only match with itself in E2. Therefore, the above query can safely be rewritten as the following query, preserving its semantics:

    SELECT E1.SAL, E1.SAL
    FROM EMP E1

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Further, Applicants' attorney submits herewith a Supplemental Information Disclosure Statement for "Informix Guide to SQL: Tutorial, version 9.1" dated 1998, which includes a definition of "self-join," thereby indicating that the term "self-join" was well known to those of ordinary skill in the art at the time the invention was made.

Further, Applicants' attorney notes that the portion of U.S. Patent No. 5,899,992 to Iyer cited in the prior art rejection of Applicants' independent claims also refers to "self-joins" and identifies an SQL statement that performs a self-join. See, e.g., Iyer at col. 9, lines 33-64, as set forth below.

Consequently, Applicants' attorney requests that this rejection be withdrawn.

IV.   Prior Art Rejections

    A.   The Office Action Rejections

    In paragraphs (2)-(3) of the Office Action, claims 1, 9, and 17 were rejected under 35 U.S.C. §102(e) as being anticipated by Iyer et al., U.S. Patent No. 5,899,992 (Iyer). However, in paragraph (10) of the Office Action, claims 2-8, 10-16, and 18-24 were indicated as being allowable if rewritten to overcome the rejection under 35 U.S.C. §112, first paragraph, set forth in the Office Action and to include all of the limitations of the base claim and any intervening claims.

    Applicants' attorney acknowledges the indication of allowable claims, but respectfully traverses the rejection.

    B.   The Applicants' Independent Claims

    Independent claims 1, 9, and 17 are generally directed to performing a query in a computer to retrieve data from a database. Claim 1 is representative, and comprises the steps of:

    (a) determining whether a query includes a self join that is transitively derived through table expressions having UNION operators; and

    (b) simplifying the query to eliminate the table expressions and to reduce the query to an equivalent query over tables, when the query includes the self join that is transitively derived through the table expressions having the UNION operators.

    C.   The Iyer Reference

    Iyer discloses a method, apparatus, and article of manufacture for a computer implemented scaleable set-oriented classifier. The scalable set-oriented classifier stores set-oriented data as a table

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in a relational database. The table is comprised of rows having attributes. The scalable set-oriented classifier classifies the rows by building a classification tree. The scalable set-oriented classifier determines a gini index value for each split value of each attribute for each node that can be partitioned in the classification tree. The scalable set-oriented classifier selects an attribute and a split value for each node that can be partitioned based on the determined gini index value corresponding to the split value. Then, the scalable set-oriented classifier grows the classification tree by another level based on the selected attribute and split value for each node. The scalable set-oriented classifier repeats this process until each row of the table has been classified in the classification tree.

D.   The Applicants' Invention is Patentable Over the References

The Applicants' invention, as recited in independent claims 1, 9, and 17 is patentable over the Iyer reference, because it contains limitations not taught by Iyer.

The Office Action, however, asserts the following:

> Claims 1, 9, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Lyer et al.(U.S. Pat. No. 5,899,992, hereinafter Lyer).
> The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.
> For the compact of prosecution claims 1, 19 and 17 will be rejected based on the best understanding of the examiner.
> A recitation (e.g. "to eliminate the table expressions and to reduce the query to an equivalent query over tables") of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCPA 1963).
> As per claim 1, Lyer et al. disclose "a method for a computer implemented scaleable set oriented classifier" by providing the scalable set-oriented classifier stores set-oriented data as a table in a relational database (See Lyer et la. Title ; Abstract). In particular, Lyer et al. disclose the claimed limitations of "determining whether a query includes a self join that is transitively derived through table expression having union operators; and simplifying the query, when the query includes the self join that is transitively derived through the table expression having the union operators" (See Lyer et al. col9, lines 33-64).

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As per claims 9 and 17, most of the limitations of the claims have been noted in the rejection of claim as substantially the same. Except that claim 9 is directed to a computer implemented apparatus and claim 17 to an article of manufacture. Therefore, they are rejected in similar ground corresponding to the arguments given for the rejected claim 1 above. In addition Lyer et al. disclose a apparatus and article of manufacture for a computer implemented (See Lyer et al. Abstract).

Applicants' attorney respectfully disagrees.

The statement in the Office Action that the limitations "to eliminate the table expressions and to reduce the query to an equivalent query over tables" are a mere assertion of intended use is incorrect. Instead, these limitations recite functions and steps performed by the Applicants' claimed invention. For example, the "table expressions" limitation links the "determining" and "simplifying" elements of Applicants' independent claims. In addition, the limitation "to eliminate the table expressions" defines the act of "simplifying the query." Finally, the limitation "to reduce the query to an equivalent query over tables" identifies the result of the of the "simplifying the query." Consequently, these limitations are not mere assertions of intended use.

Moreover, the cited reference is not capable of performing these functions and steps. Consider the description found in Iyer at the location indicated by the Office Action:

Iyer: Col. 9, lines 33-64

Similarly, the DOWN table could be generated by just changing the $<=$to$>$ in the ON clause. Also, the SLIM classifier 114 can obtain the DOWN table by using the information in the leaf nodes and the count column in the UP table without doing join on DIMI again.

In case the outer-join operator is not supported, by performing simple set operations such as EXCEPT and UNION, the SLIM classifier 114 can form a view DIM_i' with the same schema as DIM_i first. For each possible split value on attribute i and each possible class label of each node, there is a row in DIM_i' that gives the number of rows belonging to this leaf node that have such a value on attribute i and such a class label. Note that DIM_i' is a superset of DIM_i and the difference between them are those rows with a count 0. After DIM_i' is generated, the SLIM classifier 114 performs a self-join on DIM_i' to create the UP table as follow:

```
INSERT INTO UP
SELECT d₁.node_num, d₁.attri, d₁.class,
SUM(d₂.count)
FROM DIM, d₁, DIMᵢ d₂
WHERE  d₁.leaf_num=d₂.leaf_num AND
         d₂.attrᵢ <=d₁.attri AND
         d₁.class=d₂.class
GROUP BY d₁.leaf_num, d₁.attri, d₁.class
```

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The UP and DOWN tables contain all the information the SLIM classifier 114 needs to compute the gini index at each possible split value for each current leaf node in the classification tree 200, but the SLIM classifier 114 needs to rearrange them in some way before the gini index is calculated.

Nothing in the above description teaches or suggests "determining whether a query includes a self join that is transitively derived through table expressions having UNION operators," and "simplifying the query to eliminate the table expressions and to reduce the query to an equivalent query over tables, when the query includes the self join that is transitively derived through the table expressions having the UNION operators." Instead, the above description merely states that the SLIM classifier 114 performs a self-join on DIM, to create the UP table.

Thus, Iyer does not anticipate or render obvious Applicants' claimed invention. Moreover, the various elements of Applicants' claimed invention together provide operational advantages over Iyer In addition, Applicants' invention solves problems not recognized by Iyer.

Thus, Applicants' attorney submits that independent claims 1, 9, and 17 are allowable over the reference. Further, dependent claims 2-8, 10-16, and 18-24 are submitted to be allowable over the reference in the same manner, because they are dependent on independent claims 1, 9, and 17, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-8, 10-16, and 18-24 recite additional novel elements not shown by the reference.

V.   Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited.

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Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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